

METHOD AND APPARATUS FOR THE PULSE-WISE SUPPLY OF A VAPORIZED LIQUID REACTANT

Abstract of the Disclosure

Methods and structures provide vaporized reactant from a liquid source to a vapor deposition reactor, such as an atomic layer deposition (ALD) reactor. A storage container holds the bulk of liquid reactant (or solid reactant dissolved in a liquid solvent) outside of the reactor hot zone(s), and so are not subject to decomposition from prolonged exposure to high temperatures. The storage container is in fluid communication with a vaporization chamber within a hot zone of the reactor, such that a high vapor pressure can be maintained within the vaporization chamber. Refilling the storage container outside of the hot zone(s) is simplified, and the bulk of the liquid reactant is not subject to prolonged exposure to destabilizing temperatures. At the same time, the advantages of maintaining a vaporization chamber within a hot zone are maintained. Furthermore, between deposition runs, or periodically when not needed, remaining liquid reactant in the vaporization chamber can be drained back to the storage container or to a separate drain container, where cooler temperatures are maintained.

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